CLAIMS

1. A method of producing curved lengths of spring band steel, comprising the steps of bending a spring band steel (10) which is made up of lengths of spring band steel (11) that adjoin one another and are of one piece with one another, between three support points (23-25), which are spaced from each other in a spring band steel advancing direction and rest against alternating band sides of the spring band steel (10); at a subsequent support point (32), bending back by a lesser bending degree in an opposite direction, cutting the length of spring band steel (11) that is treated in this manner from the spring band steel (10); an embodying less of the three support points (25) for the bending of the spring band steel as a cutting edge (30) with a cutting edge (30) on which a cutting blade (31) is conveyed passed in order to cut the length of the spring band steel (11).

2. A method as defined in claim 1; and further ~~comprising~~ Comprising constituting ~~the~~ other support points (23, 24, 32) by a circumference of a roller (26, 27, 33).

3. A method as defined in claim 1; and further comprising marking the lengths of spring band steel (11) following one after the other in the spring band steel (10) by trigger holes in the spring band steel (10); and using the trigger holes to trigger a beginning and end of the bending and reverse bending and to trigger a cutting process.

4. A method as defined in claim 1; and further comprising optically measuring at least a part of the cut lengths of spring band steel (11) and comparing to preset reference values; and using average deviations from reference value to correct the bending and reverse bending.

5. A method as defined in claim 1; and further comprising setting the bending degree of the spring band steel (10) in the three support points (23-25) to be greater by the reverse bending degree at the fourth support point (32) than a required final bending radius of the length of spring band steel (11).

6. A method as defined in claim 1; and further comprising empirically determining the reverse bending degree.

7. A method as defined in claim 1; and further comprising providing the reverse bending degree to be 10-20% of the bending degree.

8. A method as defined in claim 1; and further comprising embodying a center of the three support points (24) for the bending of the spring band steel and the fourth support point (24) for the reverse bending of the spring band steel so that, they can respectively be moved lateral to the spring band steel (10) in direction of a band thickness (d) and their lateral movements relative to the spring band steel (10); and controlling their lateral movements relative to the spring band steel (10) in accordance with predetermined programs which taken into account a varying material thickness within the lengths of the spring band steel.

9. A method as defined in claim 1; and further comprising embodying a center of the three support points (24) for the bending of the spring band steel and the fourth support point (24) for the reverse bending of the spring band steel so that, they can respectively be moved lateral to the spring band steel (10) in direction of a band thickness (d) and their lateral movements relative to the spring band steel (10); and controlling their lateral movements relative to the spring band steel (10) in accordance with predetermined programs which taken into account a constant material thickness within the lengths of the spring band steel.

10. A method as defined in claim 1 and further comprising carrying the bending and reverse bending of the spring band steel (10), with continuous advancing of the spring band steel which is temporarily interrupted for the cutting of the lengths of the spring band steel (11).

11. A device for producing curved lengths of spring band steel (11), comprising a bending unit (20) comprised of three support points (23-25) spaced apart from one another through which a spring band steel (10), which is made up of the lengths of spring band steel (11) that are disposed one after another and are of one piece with one another, can be conveyed so that the support points (23 - 25) rest against alternating band sides in the spring band steel advancing direction, wherein the center support point (24) is embodied so that it can be moved lateral to the spring band steel (10) in order to adjust a bending radius; a reverse bending unit (22), which is disposed after the bending unit (20) in the advancing direction of the spring band steel (10) and includes a fourth support point (32) that engages the same band side of the spring band steel (10) as the central support point (24) of the bending unit (20), which fourth support point (32) can be moved lateral to the spring band steel (10) in order to adjust a reverse bending radius; a cutting unit (21) for cutting the length of spring band steel (11) passing through the banding and reverse bending unit (20, 22) from the spring band steel (10), the cutting unit (21) being disposed between the bending and reverse bending unit (20, 22).

8 12. A device as defined in claim 1 11, wherein the cutting unit (21) is integrated into the bending unit (20) by virtue of the fact that the last support point (25) of the bending unit (20) in the advancing direction of the spring band steel is embodied as a cutting edge (30) extending over the width of the spring band steel, which a cutting blade (31) is guided past, moving lateral to the spring band steel (10).

9 13. A device as defined in claim 1, wherein the adjusting movements of the central support point (24) of the bending unit (20) and the support point (32) of the reverse bending unit (22) are controlled by means of a control unit (29) in accordance with programs which take into account the varying material thickness and the possibly varying, predetermined zonal bending radii of the lengths of spring band steel (11).

10 14. A device as defined in claim 1 13, wherein the lengths of spring band steel (11) following one after the other in the spring band steel (10) are marked by means of trigger holes (12) in the spring band steel (10) which are used to trigger the control unit (29) in order to begin and end the bending and reverse bending programs and to trigger the cutting process by means of the cutting unit (21).

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15. A device as defined in claim 13, wherein the programmed adjusting movement of the central support point (24) of the bending unit (20) and the programmed adjusting movement of the support point (32) of the reverse bending unit (22) are matched to each other so that the bending degree produced in the bending unit (20) is greater by the reverse bending degree than the predetermined final bending degree of the length of spring band steel (11).

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16. A device as defined in claim 15, wherein the magnitude of the reverse bending degree is empirically determined.

17. A device as defined in claim 15, wherein the reverse bending degree is selected to be 10-20% of the bending degree.

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18. A device as defined in claim 13, wherein an image capturing system (36) is provided for optically measuring the finished lengths of spring band steel (11) cut from the spring band steel (10) and determining the deviation from a preset reference value, and by means of a correcting device (37) for correcting the bending and/or reverse bending program as a function of an average reference value deviation.

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~~19~~. A device as defined in claim ~~12~~, wherein the first support point (23) of the bending unit (20) in the advancing direction of the spring band steel (10) is embodied so that it can be moved, preferably manually, lateral to the spring band steel (10) in the direction of the band thickness.

16 1
~~20~~. A device as defined in claim ~~12~~, wherein the two support points (23, 24) of the bending unit (20) and the support point (32) of the reverse bending unit (22) are constituted by the circumference of rollers (26, 27, and 33).

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~~21~~. A device as defined in claim ~~11~~, wherein the spring band steel (10) is wound on a storage roll (15) and that the spring band steel (10) is conveyed between at least two driven advancing rollers (13, 14), which engage opposite band sides of the spring band steel (10), take the spring band steel (10) from the storage roll (15), and supply it tot he bending unit (20).

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~~22~~. A device as defined in claim ~~11~~, wherein a number of rollers selected from the group consisting of guide rollers (16-19) and guide rails are disposed ahead of the bending unit (20) and rest in pairs against opposite sides of the spring band steel (10).

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